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signed Federal Official

Honorable Stephen L. Johnson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW.
Washington, DC 20460

Dear Administrator Johnson:

The Environmental Financial Advisory Board (EFAB) is pleased to submit the enclosed report, "Affordability Rate Design for Households," for the Agency's consideration and use. This report provides an option that addresses the "how to pay" challenge of providing sustainable water and wastewater services.

Despite substantial environmental achievements, there are still many unmet water and wastewater needs in U.S. cities and towns. These include capital improvements needed to comply with regulations and to replace aging infrastructure. They also include the investments needed to extend water and sewer service to new customers, or to upgrade existing water infrastructure. Local governments, water and sewer utilities, states, individual households, and EPA are all affected by these challenges and all have a stake in finding equitable solutions.

EPA, itself, has identified four pillars of sustainable infrastructure to help address many of these environmental challenges facing the nation. One of these pillars focuses on better utility management and another on full cost pricing. The strength of these pillars may depend on the effectiveness and assurances that water and sewer rates are affordable as significant new investments are planned to address environmental needs throughout the country.

This report highlights that household-level affordability problems often result in increased costs and decreased revenues for water and wastewater utilities, impacting all customers, rich and poor alike. Excessive numbers of disconnections for non-payment create major inconvenience for households and may contribute to public health problems. Perhaps most important, however, is the fact that significant numbers of household-level affordability problems create a political climate where it is impossible for utilities to achieve or maintain full-cost rates. This, in turn, leads to deferrals of maintenance, upgrading, and replacement, as well as a lower standard of operation. Much of the deterioration of sewerage systems in older cities can be traced directly to decades of inadequate rate levels, sometimes associated with multiple failed attempts to increase rate levels.

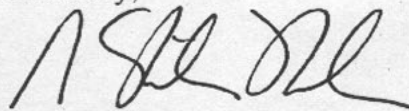
EFAB concludes that in many cases, water and wastewater affordability is primarily a household problem, not a community-level problem, and in these cases can be mitigated through careful design of utility policies regarding subsidy, rates, collections, and financial assistance. We encourage EPA to consider disseminating this finding to states and utilities since it encourages an effective method of dealing with affordability that is important precisely because it may assist in removing existing political and economic barriers to achieving full cost recovery, while minimizing negative effects on fiscal accountability. In the short term, this finding may be especially helpful to EPA and States during compliance and project negotiations with municipalities and counties to mitigate the financial impact on their users.

In a broad sense, we believe that the household-level affordability concerns have long been, and continue to be, of considerable importance to EPA and its programs. In this regard, we suggest that you consider developing an affordability handbook that can assist utilities in structuring an effective affordability program. The handbook should include a special focus on household affordability through proper diagnosis, sound rate design, the development of an effective subsidy program combined with an appropriate collections policy. Such a handbook will be especially helpful as government and utilities attempt to address the growing infrastructure concerns amid resource cutbacks that ultimately impact poor households.

Should EPA need assistance with future affordability issues, EFAB remains ready to support the agency as needed. We suggest that EPA should study this issue further, and that it should also work with states to assess how information on effective affordability strategies can be disseminated through State Revolving Fund programs. We also encourage EPA to continue its work with other groups and/or agencies to develop more detailed proposals for addressing the significant complexities of affordability policies in a utility environment.

We hope that you will find the report and our suggestions constructive and useful. The Board is prepared to discuss its findings and recommendations, and to take any follow-up actions that are consistent with its charter. If you or your staff have questions regarding the report, or would like to arrange a meeting, please let us know. We greatly appreciate the continuing opportunity to serve the Agency.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Stanley Meiburg', written in a cursive style.

A. Stanley Meiburg
EFAB Executive Director

Enclosure

cc: Ben Grumbles, Assistant Administrator for Water
Lyons Gray, Chief Financial Officer

Environmental Financial Advisory Board

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Affordable Rate Design for Households

This report has not been reviewed for approval by the U.S. Environmental Protection Agency; and hence, the views and opinions expressed in the report do not necessarily represent those of the Agency or any other agencies in the Federal Government.

February 2006

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EFAB Affordability Report

Affordable Rate Design for Households

Background and Introduction

The United States Environmental Protection Agency (EPA), state governments and the water utility industry all have a strong interest in assuring that water and sewer rates are affordable as significant new investments are planned to address environmental needs throughout the country. Utility managers have a number of reasons to be concerned about affordability. Not the least of these is the connection between affordability problems and a general reluctance to increase rates. In some cases, this prevents utilities from raising revenue needed to replace infrastructure and upgrade their systems. For environmental officials at the local, state and federal levels, the inability of low-income households to pay higher rates is a barrier to achieving their environmental objectives. For local officials and the people they represent, the dilemma is how to responsibly manage their water infrastructure needs while reducing the financial burden for their lower-income households.

More recent discussions of water utility asset management have proposed the use of a triple bottom line: financial, environmental, and social. Financial and environmental performance both depend on the ability to recover the full cost of the services provided, while social performance requires that utilities set rates that are affordable for their citizens. If affordability is defined as a community problem, conflict between full cost pricing and affordability is frequently inevitable. But when affordability is properly conceived of as a household-level problem, conflict among these objectives is no longer necessary.

This paper discusses an approach to dealing with household-level affordability problems through careful design of utility policies regarding subsidy, collections, and financial assistance. But it should be stressed that these policies are in no way substitutes for established financial management practices, such as full cost recovery. Effective programs for dealing with affordability are important precisely because they remove existing political and economic barriers to achieving full cost recovery, while minimizing negative effects on fiscal accountability.

Discussion

Despite substantial achievements, there are still many unmet water and wastewater needs in U.S. cities and towns. These include capital improvements needed to comply with regulations and to replace aging infrastructure. They also include the investments needed to extend water and sewer service to new customers, or to upgrade existing water infrastructure. Local governments, water and sewer utilities, states, individual households, and the US EPA are all affected by these challenges and all have a stake in finding equitable solutions.

EPA has identified four pillars of sustainable infrastructure to help address these challenges. One of these pillars focuses on better utility management and another on full cost pricing. Nevertheless, the strength of these pillars may depend on the effectiveness of the response to the affordability challenge. Should programs, such as SRF and USDA, etc., that deliver the benefit of grant and loan subsidies to households in some communities, continue to be the primary means of keeping water and sewer services affordable? How can full cost pricing be

implemented while addressing the basic needs of the lowest income households? The answers to these and related questions are critical to meeting the environmental challenges of the coming years.

In an effort to assess and better understand these issues, EFAB sponsored a workshop in August 2004. Panelists representing the utility industry, state financial assistance agencies and consumer advocacy organizations presented their insights into affordability challenges and provided examples of solutions that have been tried, and their effectiveness.

Water and wastewater service affordability has been studied and researched widely over the last few years. Several studies have shown that sewer and water rates are outpacing inflation. Mandated treatment upgrades, replacement of deteriorated infrastructure, and a general move in the direction of full cost pricing all contribute to this result. Regardless of the reason, this and related trends have elicited cries of increased regressive effect, particularly on low-income consumers. Communities across the nation are increasingly wary of rising sewer and water rates, often resulting from consent decrees with federal and state governments, old infrastructure, and growth and economic expansion. These issues are growing in importance and will not disappear anytime soon.

In every community in the U.S., some households inevitably have difficulty in paying water and wastewater bills. The relative number may be large or small, but there are always some that find public utility service unaffordable. This is true whether the community as a whole is wealthy or poor, whether the average cost of water and wastewater service is high or low, and whether the utility's collections policy is strict or lax. Of course, this phenomenon is not unique to the provision of water. The same households that have trouble paying for water service are likely to have trouble paying for many other basic needs leading to a variety of social assistance programs (food stamps, housing assistance, and energy assistance programs).

This is not a problem that should be ignored, or left to the uncertain workings of existing charities and public welfare systems. In the absence of effective mitigation programs, the financial and environmental costs of household-level unaffordability can be significant and far-reaching. A significant amount of work has been pursued in defining affordability and examining how best to design effective affordability policies and programs. An important first step in addressing affordability concerns is the proper design of user rates.

A Closer Look at the Problem

The failure to set full cost rates is frequently attributed to community affordability limits, which may be wrongly characterized in terms of the community's ability to pay. In fact, the underlying cause is generally the existence of relatively large numbers of households with individual affordability problems. This creates a political climate in which significant increases in rate level are seen as unacceptable, due to the harm that would be visited on the lowest-income customers.

Water and wastewater rates that do not recover the full cost of service occur in the U.S., and throughout the world. In the absence of unlimited outside subsidies, utilities deal with this situation by deferring maintenance, deferring facility upgrades and replacements, eliminating staff functions, and maintaining low wage levels. One of the most common manifestations of

these funding problems in older American cities is a deteriorated sewer system, plagued by leaks and overflows.

For both full cost rates and less-than-full-cost rates, there are always some households, which find it difficult to pay the utility bill. The most common impacts on the utility include bloated accounts receivable and a rising number of uncollectible accounts. Depending on collections policy, there may be significant numbers of temporarily disconnected accounts. These problems result in decreased revenue collection, which creates a need for still-higher rate levels and/or increases the gap between revenue and full cost. On the household side, temporary disconnection creates major inconvenience and has the potential to promote the spread of various kinds of viral and diarrhea diseases (due to reduced hand-washing and unsafe disposal of human waste). Disconnecting and reconnecting customers also takes time and energy away from utility staff that could be spent on more productive activities.

How the Problem Can Be Addressed

The following principles can be considered:

1. **Existing rate policy should not make the problem worse.** Rates should recover the full cost of service, but they should also reflect, through their design, the cost responsibility of various users and kinds of use. This means that individual elements of the rates should be individually cost-justified, preferably reflecting the incremental cost of the associated service. Rates that set the volumetric price of water higher than the incremental cost obviously worsen the affordability problem for some users. Conversely, volumetric prices that are too low promote uneconomic use of water, increasing costs for all users, including the poor. Policies for such things as recovering capital costs through benefit assessments and one-time charges should also be examined to verify that they are cost-justified for all customers. Rates that set the volumetric price of water equivalent to incremental costs are more beneficial to all users.
2. **Customers who require assistance should be identified, if possible.** Most utilities know which customers have had difficulty in paying bills in the past, but that information is not necessarily helpful in identifying the customers that will require assistance in the future. If there is some way to characterize these customers in a way that allows individual accounts to be identified, a subsidy program can be **targeted**. This means that some objective process must identify hardship customers. Approaches for targeting customers could focus on household income, eligibility for specified public assistance programs, retirement status, age, and other such criteria. One way to do this is to define any customer who has qualified for any type of public assistance program as a hardship customer. Another approach is to allow customers to individually apply for assistance. The latter approach places an unfamiliar and probably inappropriate burden on water utilities. It is also less desirable for other reasons, including the fact that many very needy households will not apply. The use of social service agencies to certify hardship customers is much preferable.

Where targeting is not feasible because hardship customers cannot be reliably identified, another option is to design subsidies that benefit all low-use accounts on the assumption that most needy customers will fall within that group. This type of **untargeted** subsidy is more costly and less effective, but it is distinctly preferable to *ad hoc* approaches or to attempts to deal with the problem through block rate design.

3. **The source of the subsidy should be identified.** There are at least four choices here: (a) the subsidy can come from general tax revenues, through some established state or local social program; (b) the subsidy can come from a federal program similar to LIHEAP that directly provides subsidy to the consumer, who in turn would pay the utility; (c) the subsidy can come from all utility customers who do not receive a subsidy (non-hardship customers); or (d) the subsidy can come from all utility customers, whether or not they can be considered hardship customers. Each of these options has advantages and disadvantages. The first two options (subsidy from tax revenues and federal programs) may not be possible or feasible in every community. Note, however, that the first two options may become more feasible with significant state and local government assistance.

The difference between the other two options can be illustrated by a very simple example. This example considers only the case where there is no outside subsidy available to the utility—the program is funded by increasing some charges, or charges to some customers. The example is constructed for a medium-sized community. Note, however, that the customer and water use assumptions can be scaled: dividing each number by 100, for example, will produce exactly the same results for a community with 1,000 customers.

Assume: Number of (residential) customers = 100,000
 Total water sales = 750 MG/month
 Number of hardship customers = 6,000
 Water sales to hardship customers = 30 MG/month
 Average water sales to hardship customers = 5,000 gal/HH/month
 Average water sales to non-hardship customers = 7,660 gal/HH/month

For this example, water use is assumed invariant with respect to price. In addition, for convenience, subsidies are conveyed through the fixed charge, resulting in a negative fixed charge in some cases. In practice, such a policy would require a minimum bill constraint; the revenue effect of such a constraint has not been included here. The table shows four alternative rate designs:

A. *Base case.*--The original, subsidy-free rate design. Hardship customers receive smaller average bills because they are assumed, on average, to have lower water use. However, a bill of \$42.50 per month will still create an affordability problem for some households.

B. *Targeted subsidy, financed by non-hardship customers.*--This design incorporates a subsidy of \$20.00 per month for hardship customers only, financed by increasing the variable charge for non-hardship customers. Note that the increased cost for non-hardship customers is small.

C. *Targeted subsidy, financed by all customers.*--This is the same as design B, except that all customers contribute equally to financing the subsidy. The result (as compared to B) is a slightly lower cost for non-hardship customers and a slightly smaller subsidy for hardship customers.

D. *Non-targeted subsidy, financed by all customers.*--This illustrates a non-targeted subsidy, where the rate design is altered to favor low-use customers. To the extent that hardship customers are low water users, they will benefit from this design. While this may be true on average, it should be noted that some hardship customers are, in fact, relatively high water users.

	A	B	C	D
Nonhardship customers --				
Fixed charge \$/month	10.00	10.00	10.00	-10.00
Variable charge \$/1,000 gal	6.50	6.667	6.66	9.167*
Cost of subsidy: \$/month for avg. customer	0.00	1.277	1.226	0.426
Average bill (\$/month)	59.79	61.06	61.01	60.21
Hardship customers --				
Fixed charge \$/month	10.00	-10.00	-10.00	-10.00
Variable charge \$/1,000 gal	6.50	6.50	6.66	9.167*
Subsidy \$/month for avg. customer	0.00	20.00	19.20	6.667
Average bill (\$/month)	42.50	22.50	23.30	35.83

* The particular example used for Alternative D leads to a much higher variable charge. The impact of this charge on high-use customers would have to be evaluated.

This comparison is only for the purpose of illustrating the impact of targeting and defining the source of any subsidy. In practice, there are numerous choices in the design of a rate schedule as well as additional considerations not discussed here.

Note that none of these alternatives subsidize the volumetric charge. This preserves incentives for all customers to use water efficiently. It also avoids a fallacy associated with the attempted use of block-type rate designs to deliver subsidies: within each block of an increasing block design, the size of the subsidy increases with water use (the smallest users receive the smallest subsidy in these cases).

4. **There must be an effective collections policy.** No matter how carefully subsidies are defined, targeted (where possible), and delivered, there will always be some customers who do not, for various reasons, pay their utility bill. The effective operation of a subsidy program requires that there be consequences for those who do not pay. Good commercial practice usually involves an escalating series of warnings, communication with the customer regarding possible sources of assistance (see #5, below), and ultimate turnoff of the service. When service has been disconnected for more than a few days, the utility should notify appropriate public health and housing agencies, and should regularly inspect the premises to determine that service has not been illegally reconnected.

5. **There must be a safety net.** Even when all of the preceding steps are fully implemented, some customers will still reach the end of the collections process unable to settle their bill. The utility should determine what kinds of public assistance, or assistance from private charities, may be available to such households. This information can be communicated to the household during the collections process (step #4, above). Some utilities also arrange

installment payment plans in special circumstances, but this is only suitable for households with short-term cash flow problems. The provision of the safety net should not be the utility's responsibility, but any existing programs should be recognized and integrated into the utility's plan.

Conclusion

Household-level affordability problems often result in increased costs and decreased revenues for water and wastewater utilities that impact all customers. Excessive numbers of disconnections for non-payment create major inconvenience for households and may contribute to public health problems. Perhaps most important, however, is the fact that significant numbers of household-level affordability problems create a political climate where it is impossible for utilities to achieve or maintain full-cost rates. This, in turn, leads to deferrals of maintenance, upgrading, and replacement, as well as a lower standard of operation. Much of the deterioration of sewerage systems in older cities can be traced directly to decades of inadequate rate levels, sometimes associated with multiple failed attempts to increase rate levels.

The household affordability problem can be effectively mitigated through proper diagnosis, sound rate design, the development of an effective subsidy program combined with an appropriate collections policy, and ultimately supported by public or private charitable assistance in the very neediest cases. When household-level affordability problems have been explicitly dealt with, it may be possible for underfunded utilities to seek the rate levels needed to properly operate and maintain their systems.

This report illustrates the use of a two-part tariff to convey a subsidy to certain customers within the framework of a full cost recovery rate policy. Where hardship customers can be identified with reasonable accuracy, a (targeted) subsidy can be directed to them. Where hardship customers cannot be identified, a non-targeted subsidy can be provided to low-use customers. However, not all hardship customers are low-use customers. Also, in many cities significant numbers of hardship customers may live in multi-family structures with a single master meter. These situations, to the extent that they occur, would reduce the effectiveness of the kind of subsidy program described here. It is essential that each community analyze its own affordability problem and develop a rate policy which meets its specific needs.

Historically, federal water and sewer funding programs such as SRF, USDA Rural Development, and HUD Small Cities have played an important role in mitigating community level affordability problems. The role of these programs in dealing with targeted household affordability issues has not been addressed in this document and may deserve more attention in the future. Also, it should be clear that affordability is enhanced by any change which reduces the average cost of water utility operations, or which spreads costs over a broader base. To this end, increased use of regional cooperatives, combined water/wastewater districts, or other forms of joint operations should be considered where relevant and feasible. These topics are not addressed in this document, but may also deserve more attention in the future.